



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,787	12/21/2005	Helge Wessel	283017US0PCT	5839
22850 7590 07/06/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER VANOUY, TIMOTHY C	
			ART UNIT 1754	PAPER NUMBER
			NOTIFICATION DATE 07/06/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,787	<b>Applicant(s)</b> WESSEL ET AL.	
	<b>Examiner</b> Timothy C. Vanoy	<b>Art Unit</b> 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>Dec. 21, 2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

a) In claim 2 the phrase "consist of" is objected to because it is believed that the support consists of Fe-Cr-Al alloys, but not the entire catalyst system because this support supports the catalytically active materials, which are excluded from the support via the "consist of" language. In other words, the "consist of" language materially excludes the catalytically active materials from being coated on the Fe-Cr-Al alloy support.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) Claim 5 does not particularly point out and distinctly set forth what the temperature range is for.

Art Unit: 1754

b) Claim 6 does not particularly point out and distinctly set forth what the residence time is for.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 02/092196 A1 to Brandin.

Figure 5 and the discussion of Fig. 5 on pg. 13 Ins. 7-21 in the Brandin reference discloses a method for producing zeolite catalytic nets that support rhodium metal catalytic material comprising the steps of dipping nets in a slurry comprising H mordenite zeolite powder; the dipped nets are removed from the slurry and left to drip dry; drying the nets at 150 °C in hot air oven and then calcining the net at 500 °C for 12 hours. These calcined catalytic nets were then dipped in a 0.02 M solution of RhCl<sub>3</sub>; removed from the solution; dried at 150 °C, and then calcined at 500 °C for 1 hour.

Figure 5 shows that these catalytic nets are able to convert N<sub>2</sub>O with a selectivity of about 0.05.

***Claim Rejections - 35 USC § 103***

Art Unit: 1754

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/092196 A1 to Brandin in view of U. S. Pat. 6,649,134 B2 to Gorywoda et al.

Figure 5 and the discussion of Fig. 5 on pg. 13 Ins. 7-21 in the Brandin reference discloses a method for producing zeolite catalytic nets that support rhodium metal catalytic material comprising the steps of dipping nets in a slurry comprising H mordenite zeolite powder; the dipped nets are removed from the slurry and left to drip dry; drying the nets at 150 °C in hot air oven and then calcining the net at 500 °C for 12 hours. These calcined catalytic nets were then dipped in a 0.02 M solution of  $\text{RhCl}_3$ ; removed from the solution; dried at 150 °C, and then calcined at 500 °C for 1 hour.

Figure 5 shows that these catalytic nets are able to convert  $\text{N}_2\text{O}$  with a selectivity of about 0.05, as set forth in applicants' claims 1, 3, 4, 6 and 7.

The difference between the applicants' claims and this Brandin reference is that applicants' claim 2 sets forth that the nets may be constructed from Fe-Cr-Al alloys.

U. S. Pat. 6,649,134 B2 is drawn to the same art of catalytically converting  $\text{N}_2\text{O}$  with catalytic nets, wherein col. 2 Ins. 55-57 reports that heat-resisting steel (Fe-Cr-Al alloy) catalytic nets have been found to give good results.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the catalytic nets of the Brandin reference *by making them* out of heat-resisting steel (i. e. Fe-Cr-Al alloy), in the manner set forth in applicants' claim 2, *because* col. 2 Ins. 55-57 in U. S. Pat. 6,649,134 B2 reports that "good results" have been found in using heat-resisting steel (i. e. the Fe-Cr-Al alloy of applicants' claim 2) as the material for the catalytic net for converting  $\text{N}_2\text{O}$  in a gas.

The difference between the applicants' claims and the Brandin reference is that applicants' claim 5 sets forth that the temperature range is 500 to 980 °C (presumably for catalytically converting the N<sub>2</sub>O, however the claim language does not particularly point out what the temperature range is for), whereas Fig. 5 in the Brandin reference shows conversion temperatures only as high as 450 °C with a concomitant conversion selectivity only as high as about 0.05.

In U. S. Pat. 6,649,134, the data set forth in Table 1. titled "Experiments in the Test Reactor" set forth in col. 3 shows conversion efficiencies for converting N<sub>2</sub>O as high 96% by using a somewhat similar rhodium-containing catalytic net to that used in the Brandin reference, however the reactor was operated at a temperature of 880 °C (please also see col. 3 ln. 55 in U. S. Pat. 6,649,134 B2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the N<sub>2</sub>O conversion process illustrated in Fig. 5 in the Brandin reference *by operating* at temperatures ranging from 500 to 980 °C, in the manner set forth in applicants' claim 5, *because* of the expected advantage of increasing the N<sub>2</sub>O conversion efficiency to as high as 96% by using these elevated conversion temperatures, in the manner fairly suggested by the data set forth in Table 1 titled "Experiments in the Test Reactor" set forth in col. 3 in U. S. Pat. 6,649,134 B2 that were evidently obtained from the operating temperature of 880 °C set forth in col. 3 ln. 55 in U. S. Pat. 6,649,134 B2.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 6,743,404 B1 Schumacher et al. in view of WO 02/092196 A1 to Brandin.

Col. 1 Ins. 9-27 in U. S. Pat. 6,743,404 B1 discloses the classic Ostwald process for manufacturing nitric oxide (and therefore renders obvious the reactor and apparatus for this process), comprising the steps:

catalytically oxidizing ammonia with oxygen gas over a catalytic gauze comprising noble metals at a temperature of 800 to 955 °C to form oxides of nitrogen; passing the oxidized gas through a recovery gauze for recovering the catalyst metals that have been vaporized at the time temperatures; passing the gas through a heat exchanger to cool down the gas mixture, and passing the cooled gas through an absorption zone containing water so that the nitrogen oxides are sorbed into the water and converted into nitric acid.

Col. 2 Ins. 39-50 sets forth that the Ostwald process also produces N<sub>2</sub>O by-product, which is not absorbed by the water in the absorption step. If no further steps are taken to remove the N<sub>2</sub>O, it can be emitted into the atmosphere and promote the destruction of the ozone layer.

The invention of U. S. Pat. 6,743,404 modifies the classic Ostwald process by providing a N<sub>2</sub>O-destroying catalyst at a location between the noble metal gauze catalyst and the heat exchanger (please see col. 2 Ins. 17-22).

Thus, U. S. Pat. 6,743,404 teaches all the limitations of applicants' claims 8 and 9 but for the form of the N<sub>2</sub>O-destroying catalyst being in the form of a wire gauze supporting catalytic material.



Figure 5 and the discussion of Fig. 5 on pg. 13 Ins. 7-21 in the Brandin reference discloses a method for producing zeolite catalytic nets that support rhodium metal catalytic material comprising the steps of dipping nets in a slurry comprising H mordenite zeolite powder; the dipped nets are removed from the slurry and left to drip dry; drying the nets at 150 °C in hot air oven and then calcining the net at 500 °C for 12 hours. These calcined catalytic nets were then dipped in a 0.02 M solution of  $\text{RhCl}_3$ ; removed from the solution; dried at 150 °C, and then calcined at 500 °C for 1 hour. Figure 5 shows that these catalytic nets are able to convert  $\text{N}_2\text{O}$  with a selectivity of about 0.05.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process and apparatus taught in U. S. Pat. 6,743,404 B1 *by substituting* the  $\text{N}_2\text{O}$ -destroying catalyst of the Brandin reference *in lieu of* the  $\text{N}_2\text{O}$ -destroying catalyst of U. S. Pat. 6,743,404, in the manner that meets all of the limitations of applicants' claims 8 and 9, *because* the courts have already determined that such substitution of one known functional equivalent in lieu of another known functional equivalent (both equivalents useful for the same purpose) is *prima facie* obvious, and no express suggestion in the prior art is required for such a substitution: please note the discussion of the *In re Fout* 675 F.2d 297, 213 USPQ 532 (CCPA 1982) court decision set forth in section 2144.06 in the MPEP.

The following references are made of record:

U. S. Pat. 5,250,490 disclosing a noble metal supported on a base metal catalyst;

U. S. Pat. 5,266,546 disclosing an open mesh wire support containing particulate catalyst;

U. S. Pat. 5,314,673 disclosing a process for the conversion of  $N_2O$ ;

U. S. Pat. 5,612,009 disclosing the catalytic decomposition of dinitrogen monoxide;

U. S. Pat. 6,890,499 B2 disclosing a catalyst for the decomposition of  $N_2O$ ;

U. S. Pat. 7,192,566 B2 disclosing a process for the catalytic decomposition of  $N_2O$  into  $N_2$  and  $O_2$  which is carried out at high temperature;

US 2002/0127932 A1 disclosing a three-dimensional catalyst gauze knitted in two or more layers; and

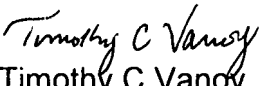
US 2006/0008401 A1 disclosing a decomposition catalyst for nitrous oxide, a process for producing the same and a process for decomposing nitrous oxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1754

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Timothy C Vandy  
Primary Examiner  
Art Unit 1754

tcv